Weather Note

"RADAR HOOK" OBSERVED WITH 21-DECIBEL GAIN REDUCTION

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A large thunderstorm produced several tornadoes intermittently as it moved northeastward from the Kansas-Oklahoma border into southeastern Kansas on March 16, 1965. Surface and upper air charts for 1800 CST, March 16 are shown in figures 1 and 2. This storm, which was tracked 350 mi. (insert, fig. 3), first appeared on radar near Vinson, Okla. (about 33 mi. northeast of Childress, Tex.) about 1245 CST and moved northeastward across Oklahoma and Kansas until it was lost in a solid area of precipitation just south of Kansas City around 2200 CST.

The first sighting of severe weather with this storm was a funnel cloud aloft just east of Seiling, Okla. at 1540 CST (about 50 mi. southwest of the first observed tornado). The first tornado was reported in this cell near Nash, Okla., at 1640 CST (fig. 3, arrow No. 1). No clear hook was photographed at this time, possibly because the receiver gain had not been reduced while a picture was being taken. Heavy damage occurred between Nash and Medford, Okla., where a church and parsonage were blown away along with a steel granary. Another tornado was reported in this cell just south of South Haven, Kans. (fig. 3, arrow No. 2) across the Kansas-Oklahoma border

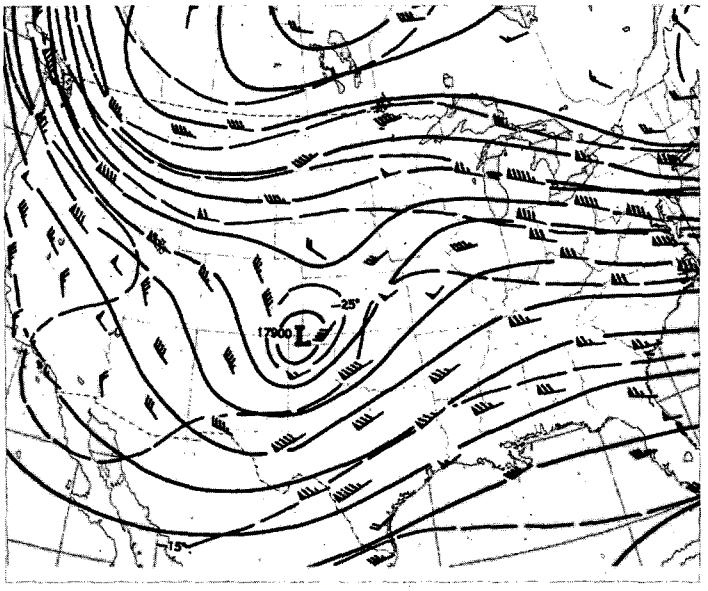

FIGURE 2.—500-mb. chart for 1800 CST March 16, 1965.

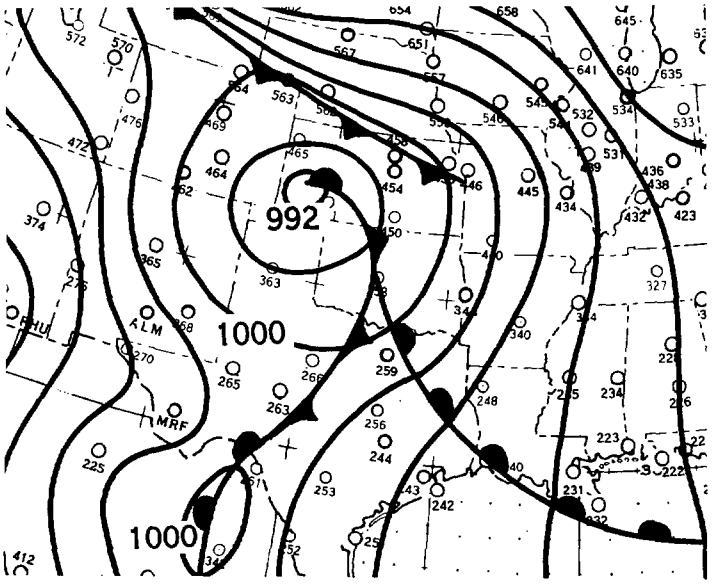

FIGURE 1.—Surface map for 1800 CST March 16, 1965.

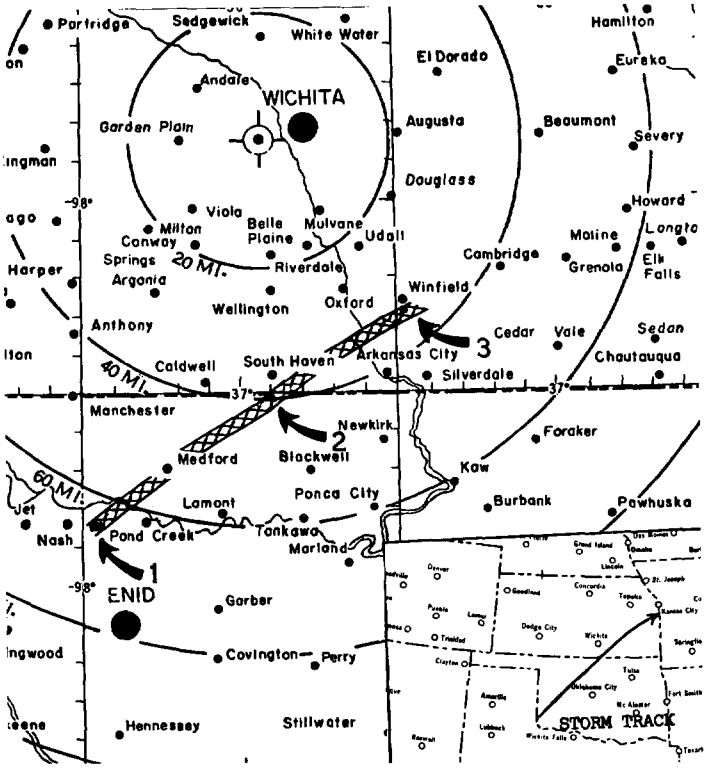

FIGURE 3.—Path of the cell which produced several observed tornadoes. Arrows show where significant tornadoes were observed.

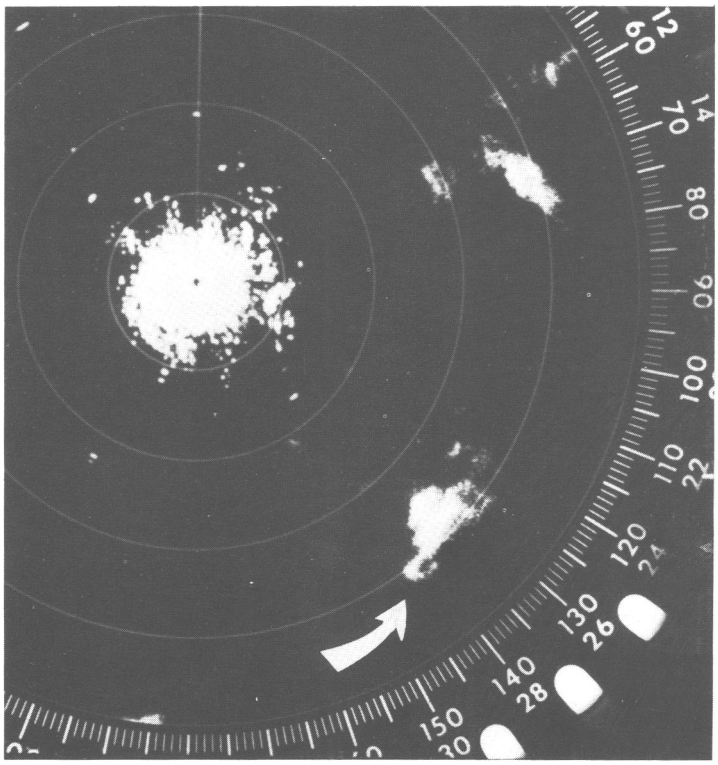

FIGURE 4.—"Hook" as seen at 1823 CST on the WSR–57 radar (arrow) at Wichita, Kans. with a gain reduction of 21 db. Range marks are 10 mi. apart.

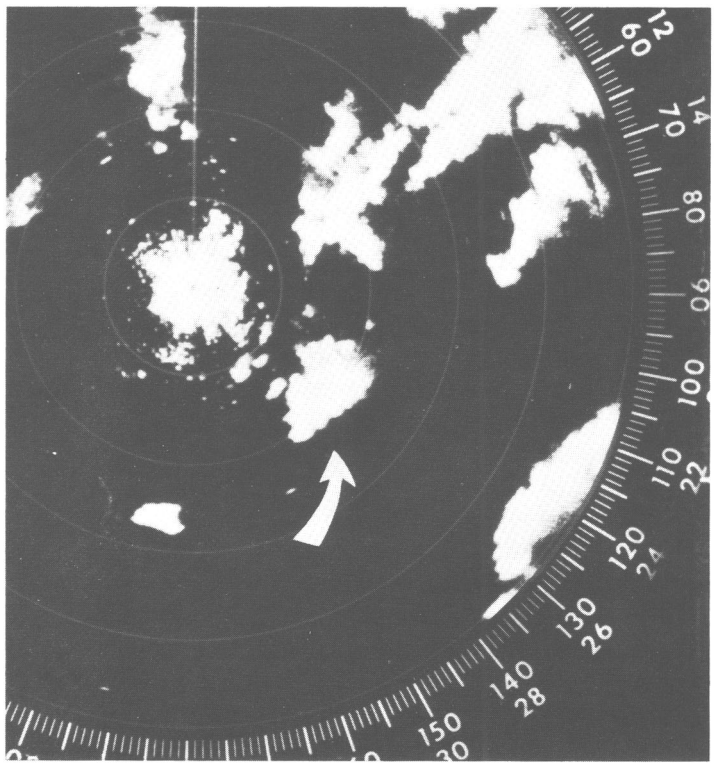

FIGURE 5.—Cell, which produced "hook" (arrow), at 1822 CST without gain reduction. Range marks are 20 mi. apart.

near Braman where a 262-ft. microwave tower rated to withstand 175 m.p.h. winds was toppled. This tornado also was not evident on film.

At 1823 CST a well-defined hook was recorded on film (fig. 4) by the radar personnel at Wichita, Kans. Just three minutes earlier a tornado was reported on the ground 1 mi. south of Winfield, Kans. (fig. 3, arrow No. 3) by the Winfield police. Several radar pictures taken just before and after this time did not show a hook, but, when the receiver gain was reduced by 21 db., a well-defined hook appeared. Figure 5 shows the cell with no gain reduction.

Hail reports between Nash and Winfield varied from ¾ to 2 in. with some fist-size clusters of hail containing about five stones each. Seven injuries were reported from this storm and property damage up to a half million dollars; this was all within a Severe Local Storms tornado forecast box. The path of the storm damage varied from 100 yd. to ¾ of a mile. The intensity of this cell was heavy between Nash and Winfield, with the RHI (Range-Height Indicator) indicating the top of this cell about 40,000 ft. The intensity became moderate after it moved northeast of the Winfield area.